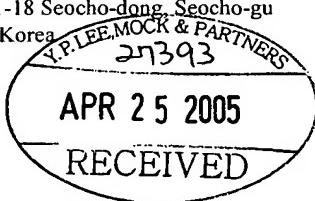


## PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING

To:  
LEE, Young-Pil

The Cheonghwa Bldg. 1571-18 Seocho-dong, Seocho-gu  
Seoul 137-874 Republic of Korea



PCT

WRITTEN OPINION OF THE  
INTERNATIONAL PRELIMINARY  
EXAMINING AUTHORITY

(PCT Rule 66)

Date of mailing  
(day/month/year) 15 APRIL 2005 (15.04.2005)

Applicant's or agent's file reference GN-21588-PCT		REPLY DUE within 2 months from the above date of mailing
International application No. <b>PCT/KR2004/000577</b>	International filing date (day/month/year) <b>17 MARCH 2004 (17.03.2004)</b>	Priority date(day/month/year) 20 MARCH 2003 (20.03.2003)
International Patent Classification (IPC) or both national classification and IPC <b>IPC7 B82B 3/00</b>		
Applicant <b>LEE, Cheol-Jin</b>		

- The written opinion established by the International Searching Authority :  is considered to be a written opinion of the International Preliminary Examining Authority.  is not
- This second (first, etc.) opinion contains indications relating to the following items:
  - Box No. I Basis of the opinion
  - Box No. II Priority
  - Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - Box No. IV Lack of unity of invention
  - Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - Box No. VI Certain documents cited
  - Box No. VII Certain defects in the international application
  - Box No. VIII Certain observations on the international application
- The applicant is hereby invited to reply to this opinion.
 

**When ?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(e).

**How ?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3.

**Also** For the form and the language of the amendments, see Rules 66.8 and 66.9.

For an informal communication with the examiner, see Rule 66.6.

For an additional opportunity to submit amendments, see Rule 66.4.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
- The final date by which the international preliminary report on patentability (Chapter II of the PCT) must be established according to Rule 69.2 is: 10 JULY 2005 (10.07.2005)

Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer  LEE, SI GEUN Telephone No. 82-42-481-8151
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**WRITTEN OPINION OF THE  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY**

International application No.

PCT/KR2004/000577

**Box No. I Basis of the opinion**

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which was filed, unless otherwise indicated under this item.
 

This opinion is based on a translation from the original language into the following language English, which is the language of a translation furnished for the purposes of:

  - international search (under Rules 12.3 and 23.1(b))
  - publication of the international application (under Rule 12.4)
  - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this opinion has been established on the basis of (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."):
 

the international application as originally filed

the description:  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_, as originally filed/furnished  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the claims:  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_, as originally filed/furnished  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_ (together with any statement) under Article 19  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the drawings:  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_, as originally filed/furnished  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3.  The amendments have resulted in the cancellation of:
 

the description, pages \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_  
 the drawings,sheet/fig \_\_\_\_\_  
 the sequence listing (specify): \_\_\_\_\_  
 any table(s) related to the sequence listing (specify): \_\_\_\_\_
4.  This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 

the description, pages \_\_\_\_\_  
 the claims, Nos. \_\_\_\_\_  
 the drawings,sheet/fig \_\_\_\_\_  
 the sequence listing (specify): \_\_\_\_\_  
 any table(s) related to the sequence listing (specify): \_\_\_\_\_

**WRITTEN OPINION OF THE  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY**

International application No.

PCT/KR2004/000577

**Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1 - 7
	Claims	none
Inventive step (IS)	Claims	none
	Claims	1 - 7
Industrial applicability (IA)	Claims	1 - 7
	Claims	none

2. Citations and explanations :

본원 발명의 제1항 내지 제7항은 아래의 인용발명 1 및 2로부터 진보성(특허협력조약 제33조(3))이 없는 발명으로 인정됩니다.

인용발명 1 : 일본공개특허공보 제2001-20071호(공개일:2001.01.23.) ↗

인용발명 2 : 미국공개특허공보 제2002-0165091호(공개일:2002.11.07.)

본원 발명과 인용발명 1 및 2의 대비

본원 발명은 기상합성법에 의한 이중벽 탄소나노튜브의 다량합성방법에 관한 것으로 특허청 구범위 제1항 내지 제7항에 기재된 바를 그 요지로 하고 있으나, 본 출원 전에 공개된 인용발명 1에서는 식각공정을 사용하여 실리콘, 알루미나 등의 기판상에 코발트, 니켈, 철 또는 이들의 합금으로 이루어지는 나노크기의 촉매금속입자를 형성하고 이에 열화학기상장치내에서 탄소소스가스를 공급함으로써 탄소나노튜브를 기판상에 대량합성시키는 방법에 관한 기술이 기재되어 있고, 인용발명 2에서는 단일벽탄소나노튜브의 제조를 위해 Co, Ni, Ru, Rh, Pd, Pt 등으로 이루어지는 Group VIII 금속 및 Mo, W, Cr로 이루어지는 Group VIb금속을 포함하며 실리카 등의 담체에 담지되는 금속촉매입자에 관한 기술이 기재되어 있어, 본 발명에서 Fe, Co, Ni, Mo 또는 이들의 합금으로 이루어진 촉매금속입자를 제올라이트, 실리카, 알루미나 등의 분말입자상의 모체의 나노기공에 담지시켜 이를 소결한 후 상기 모체에 담지된 촉매금속입자상에 탄소소스를 공급하여 이중벽탄소나노튜브를 합성하는 방법은 인용발명 1 및 2의 조합에 의해 당업자가 용이하게 발명할 수 있는 것으로서 특허협력조약(PCT) 제33조(3)에서 규정하고 있는 진보성이 없는 발명으로 인정됩니다.

**WRITTEN OPINION OF THE  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY**

International application No.

PCT/KR2004/000577

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. 본 발명의 상세한 설명 및 특허청구범위에서는 축매금속의 전구체와 축매금속입자를 모두 "축매금속입자"라고 기재함으로써, 분말입자상의 모체의 나노기공에 축매금속의 전구체가 담지되는 것인지 축매금속이 담지되는 것인지가 불명료하게 기재되어 있습니다.